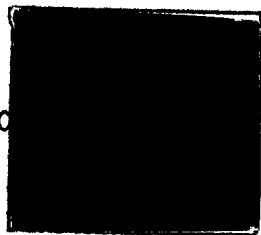


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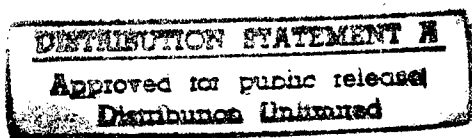
BOTANY INSTRUCTION AT THE MILITARY MEDICAL ACADEMY IMENI S. M. KIROV

- USSR -

By Ye. N. Pavlovskiy and S. Ye. Shpilenya

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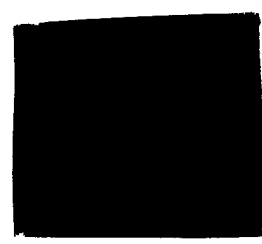
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FOREWORD

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BOTANY INSTRUCTION AT THE MILITARY MEDICAL ACADEMY IMENI S. M. KIROV

[Following is a translation of an article by Ye. N. Pavlovskiy and S. Ye. Shpilenya in the Russian language periodical Botanicheskiy Zhurnal (Journal of Botany), Vol. XLIV, No. 12, Moscow, December 1959, pages 1783-1785.]

Instruction in botany has been given for a long time at the Military Medical Academy. For many years, the Academy had a special chair of botany, headed by such well-known scientists as G. F. Sobolevskiy, P. F. Goryaninov, A. S. Famintsyn, I. P. Borodin, V. N. Lyubimenko, and others. Prior to the Great October Revolution, instruction in botany and zoology was given during the first and second course. In addition, the Academy had for many years a chair of pharmacy and pharmacognosy (Petrov, 1816; Borodin, 1898).

In 1931, the chairs of botany and zoology were united in connection with the organization of a chair for general biology and parasitology, headed by Prof. Ye. N. Pavlovskiy. The latter undertook measures for preserving botany instruction, and also for preserving and utilizing the extensive herbarium and museum collections. This important work was conducted by the botanists A. N. Danilov and V. I. Polyanskiy, assigned to the staff of the new chair (Pavlovskiy, 1940; Shpilenya, 1942). During later years, botany instruction, as part of the course on general biology, was entrusted to the only botanist on the staff of the chair, formerly assigned to the chair of pharmacology, which replaced the former chair of pharmacy and pharmacognosy. All botanic materials were transferred to the chair of general biology.

At present, instruction in the botanical section of the course on general biology is given by Docent S. Ye. Shpilenya. Students at the Military Medical Academy attend a course of lectures, the total sum of which gives the students an idea of the plant world, and several practical training courses in botany are also given. In the course on general biology, botanical problems are examined after the students have become familiar with such general biological problems as fundamental life phenomena, differences between living and non-living matter, common structural features of cells. In the general biology instruction program, approximately 1/5 of the total number of instruction hours with subsequent credit is allotted to botany instruction.

During this period, the students are provided with basic information on the development of vegetal organisms, and on their structure and diversity. In addition to problems concerned with cellular structure and metabolism, students attending the botany instruction course are acquainted with the cycle of substances in nature, photosynthesis and chemosynthesis, reproduction, fermentation, respiration, structure and functions of vegetative organs in plants (roots, leaves and stem). All this information makes it possible to prepare the students for a deeper understanding of the common features and differences exhibited by animals and plants, and helps the students to assimilate general biological laws, which are indispensable for a materialistic understanding of the great variety and connections present in living organisms based on Darwin's theory of life. It is necessary to point out that some of the above-mentioned problems are also examined in the biology instruction program given at civilian medical institutes; however, in such institutes, these problems are usually isolated and scattered throughout the entire course, and therefore fail to give a uniform (overall) concept of the biological peculiarities exhibited by plant organisms; in addition, these subjects are not, as a rule, taught by botanists.

Botany plays an equally important role during the subsequent study of such subjects as pharmacy, pharmacology and biochemistry. Constituting a long tradition of the former chair of zoology and comparative anatomy was a concept, which may be formulated as follows: when theoretical subjects are taught in a special educational establishment, special problems concerning these sciences of interest to the educational establishment in which they are taught should be taken into consideration and a satisfactory solution of these problems should be found. This tradition is maintained in our chair of general biology and acts as a stimulus for improving the activities of this chair. Let us illustrate this fact on hand of several examples. During the study of plastids, the use of chlorophyll in medical practice is pointed out, and specifically, the importance of carotene as provitamin A, etc., is described during the treatment of anemia. The importance of botany in the medical field is clearly illustrated during the study of the composition of cellular fluid, which contains such highly important organic compounds as alkaloids, glucosides, vitamins, which are widely used in medical practice. In describing the structure and the functions of plant organs (stems, roots and leaves), their utilization as medicinal raw materials is pointed out.

During the instruction of the subject matter entitled "Characteristics of the main groups of plant life", in addition to presenting a brief description of the systematic classification and phylogeny of plant groups, students acquire basic information on those types of plants which play the most important role in the medical field. For example, during the description of algae, the importance of chlorella is emphasized, the use of laminaria (kelp) in gynecological practice

is pointed out, etc. Under the chapter concerned with mushrooms (fungi), their importance in the preparation of antibiotics is pointed out, and mushrooms which are poisonous when used as food receive special attention. Many types of lichens, both fern-like, gymnospermous and angiospermae, are used as drug raw materials, and therefore information on such lichens is important for future physicians.

Medicinal plants from various localities should be subjected to a comparative pharmacological study and clinical tests. The following characteristic example may be cited. When the Military Medical Academy was relocated at the beginning of World War II, the proposal was made to collect a number of medicinal plants in Tadzhikistan, through the efforts of the Botanical Institute of the Tadzhik Affiliate of the Academy of Sciences USSR in Stalinabad, in order to test and utilize these plants at pharmacological faculties and clinics in Samarkand. A considerable amount of adonis was collected. This plant was subjected to pharmacognostic and pharmacological tests, and was then introduced in clinical use. It was found that Tadzhik adonis exerted an effect 4 times greater than the official preparation which had been supplied to pharmacies during many previous years; the distribution of the effective agent through the various parts of the plant was found to be different in Tadzhik adonis from the one occurring in the usual pharmaceutic raw material.

Equally important for future physicians is information concerning the toxicity of a given plant, as well as information on wild-growing comestible plants.

Of course, one should not go to extremes and attempt to provide students with an "encyclopedia of medicinal botany", in view of the limited available instruction time and the lack of preparedness of the part of beginners enlisted in the first course for making a sufficient evaluation of the "professional importance" of the information imparted to them. Nevertheless, students must be provided with the necessary amount of concrete knowledge, and they should acquire a clear conception of the fact that, even in our time, when organic and synthetic chemistry are widely developed, the use of medicinal plants for medical purposes is still of great importance.

Botany instruction is facilitated by the fact that a nursery of medicinal plants, attached to the chair for general biology and parasitology, is available in the academic garden of the Military Medical Academy. Up to 170 different types of the most important Soviet medicinal plants are cultivated in this nursery (Shpilenya, 1949b, 1953). This nursery has become a basis for scientific and pedagogical work done in the faculty in the botanical field. In particular, the biological laws governing the formation of alkaloids were studied at the nursery during the past years, as well as problems concerned with the cultivation of medicinal plants. Not only students of the Academy, but also students enrolled in other higher medical institutions of Leningrad, are working in this nursery.

In conclusion, we might point out that in view of the accumulated positive experience in the field of botany instruction, as part of the course on general biology given at the Military Medical Academy Imeni S. M. Kirov, it appears to be timely to consider, during the All-Union Conference on Medicinal Plants, the problem concerning the renewed instruction of botany, as a part of a course on general biology, at civilian higher medical training establishments.

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